

Claims

1. A method for coupling external antennas (14, 15) to a communication unit
5 (20), in which method

- signals of at least a first frequency range are transmitted between the unit (20) and first external antenna means (14), which antenna means are arranged for at least sending these first signals, and which frequency range is reserved for a first wireless data transfer connection,
- signals of at least a second frequency range are transmitted between the unit (20) and second external antenna means (15), which antenna means are arranged for at least sending these second signals, and which frequency range is reserved for a second wireless data transfer connection,

characterized in that

- 20 — the signals of at least the first frequency range and the signals of at least the second frequency range are combined for feeding them from the unit (20) via common coupling means (29, 26) to the external antennas (14, 15), and
- 25 — the first signals are filtered from the signals received via said common coupling means (29, 26) for feeding them to the first external antenna means (14), and the second signals are filtered from the signals received via said common coupling means (29, 30 26) for feeding them to the second external antenna means (15).

2. A method for coupling external antennas (14, 15) to a communication unit (20), in which method

- 35 — signals of at least a first frequency range are transmitted between the unit (20) and first external antenna means (14), which antenna means are arranged for at least receiving these

first signals, and which frequency range is reserved for a first wireless data transfer connection,

- 5 — signals of at least a second frequency range are transmitted between the unit (20) and second external antenna means (15), which antenna means are arranged for at least receiving these second signals, and which frequency range is reserved for a second wireless data transfer connection,

10 **characterized** in that

- 15 — the signals of at least the first frequency range and the signals of at least the second frequency range received with the external antennas are combined for feeding them via common coupling means (29, 26) to the unit (20), and
- 20 — the first signals are filtered from the received signals for feeding them to the first radio part (11) of the unit (20), which radio part is arranged for processing these signals, and the second signals are filtered from the received signals for feeding them to the second radio part (12) of the unit, which radio part is arranged for processing these signals.

25 3. An arrangement for coupling external antennas (14, 15) to a communication unit (20) and for transmitting signals between the communication unit (20) and the external antennas (14, 15), which arrangement comprises

- 30 — means by which signals of at least a first frequency range are transmitted between the unit (20) and first external antenna means (14), which frequency range is reserved for a first wireless data transfer connection,
- 35 — means by which signals of at least a second frequency range are transmitted between the unit (20) and second external antenna means (15), which frequency range is reserved for a second wireless data transfer connection,

characterized in that the arrangement also comprises

- first filter means (25), which are arranged for combining at least the first signals and at least the second signals and for feeding them via common coupling means (29, 26) to the external antennas (14, 15), for filtering the first signals from the received signals for feeding them to the first radio part (11) of the unit (20), which radio part is arranged for processing these first signals, and for filtering the second signals from the received signals for feeding them to the second radio part (12) of the unit (20), which radio part is arranged for processing these second signals, and
- second filter means (16), which are arranged for combining at least the first signals and at least the second signals received with the external antenna means (14, 15) and for feeding them via said common coupling means (29, 26) to the unit (20), for filtering the first signals from the signals received via said coupling means (29, 26) for feeding them to the first external antenna means (14), and for filtering the second signals from the signals received via said coupling means (29, 26) for feeding them to the second external antenna means (15).

4. The arrangement according to claim 3, **characterized** in that the first filter means (25) and at least part of the common coupling means (29, 26) are located in the unit (20).

5. An antenna arrangement for coupling external antennas (14, 15) to a communication unit (20), which is arranged for establishing a first and a second wireless data transfer connection, and which arrangement comprises at least

- means (24) for coupling first external antenna means (14) to the arrangement, which antenna means (14) are arranged for signals of a first frequency range, which is reserved for a first wireless data transfer connection, and
- first connector means (26) for coupling the arrangement to the unit (20), which connector means (26) are arranged for

transmitting at least said first signals between the first external antenna means (14) and the unit (20),

characterized in that

- 5 — the first connector means (26) are also arranged for transmitting signals of a second frequency range between second external antenna means (15) and the unit (20), which frequency range is reserved for a second wireless data transfer connection, and which second external antenna means (15) are arranged for said second signals, and
- 10 — that the antenna arrangement also comprises filter means (16), which are arranged for combining at least the first and at least the second signals for feeding to the first connector means (26), and/or which filter means (16) are arranged for filtering at least the first and at least the second signals from each other for feeding to said external antenna means (14, 15).
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- 20 6. The antenna arrangement according to claim 5, **characterized in that** it also comprises cable means (28) for coupling the first external antenna means (14) to the antenna arrangement, and that the second external antenna means (15) are integrated into said cable means (28).
- 25 7. The antenna arrangement according to claim 5, **characterized in that** it is formed as a holder (21) in which the unit (20) is arranged to be placed, and into which the filter means (16) and the second external antenna means (15) are integrated.
- 30 8. A communication unit, which is arranged for establishing a first and a second wireless data transfer connection, and which unit (20) comprises
 - at least first antenna means (13), which are arranged for signals of a first frequency range, which is reserved for a first wireless data transfer connection,
 - first radio parts (11) for processing said first signals,
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- second radio parts (12) for processing signals of a second frequency range, which is reserved for a second wireless data transfer connection,
- 5 — first connector means (29) for coupling first external antenna means (14) to the unit (20), which antenna means (14) are arranged for the first signals, and which connector means (29) are arranged for transmitting at least the first signals between the first external antenna means (14) and the first radio parts (11),
- 10 **characterized** in that
- the first connector means (29) are also arranged for transmitting said second signals between second external antenna means (15) and the second radio parts (12), which antenna means (15) are for the second signals, and
- 15 — that the unit (20) also comprises filter means (25), which are arranged for combining at least the first and at least the second signals for feeding to the first coupling means (29), and/or which filter means (25) are arranged for filtering at least the first and at least the second signals from each other for feeding to said radio parts (11, 12).
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- 25 9. The communication unit according to claim 8, **characterized** in that it is also provided with second antenna means, which are arranged for the signals of the second frequency range.
- 30 10. The communication unit according to claim 8 or 9, **characterized** in that the first antenna means (13) are located in a changeable antenna module, which is arranged to be coupled to the first connector means (29).
- 35 11. The communication unit according to any one of the claims 8 to 10, **characterized** in that the filter means (25) include a diplex filter, which is coupled to the first radio part (11) and the second radio part (12).
12. The communication unit according to any one of the claims 8 to 11, **characterized** in that it is arranged to couple electrically said filter means

(25) instead of the first antenna means (13) to the first connector means (29), when an antenna arrangement, which is arranged to couple the first and the second external antenna means (14, 15) to the unit (20), is coupled to said connector means (29).